DEPARTMENT OF THE ARMY
OFFICE OF THE CHIEF OF ENGINEERS
WASHINGTON, DC 20314-1000

REPLY TO
ATTENTION OF

CECW-MVD

DEC 30 2010

SUBJECT: Louisiana Coastal Area, Louisiana, Ecosystem Restoration, Six Projects Authorized by Section 7006(e)(3) of Water Resources Development Act of 2007

THE SECRETARY OF THE ARMY

1. I submit for transmission to Congress my favorable report on ecosystem restoration for six projects in multiple locations in coastal Louisiana. It is accompanied by the report of the New Orleans District Engineer and Mississippi Valley Division Engineer. These reports are in response to the authorization contained in Section 7006(e)(3) of the Water Resources Development Act (WRDA) of 2007. Section 7006(e)(3) identifies six projects referred to in the Report of the Chief of Engineers for ecosystem restoration for the Louisiana Coastal Area dated January 31, 2005, and states, in part, as follows:

> *"The Secretary may carry out the projects under subparagraph (A) substantially in accordance with the plans and subject to the conditions, recommended in a final report of the Chief of Engineers if a favorable report of the Chief is completed by not later than December 31, 2010."*

Preconstruction engineering and design of all six projects will be undertaken under the authority provided in Section 7006(e)(3). Construction of these projects will be undertaken under the Section 7006(e)(3) authority as well, except for construction of the Medium Diversion at White Ditch and the elements of the Terrebonne Basin Barrier Shoreline Restoration beyond the Whiskey Island component.

2. The Report of the Chief of Engineers for ecosystem restoration for the Louisiana Coastal Area, dated January 31, 2005, (hereinafter referred to as the "restoration plan"), describes a program to address the most critical restoration needs to reduce the severe wetland losses occurring in Louisiana. The restoration plan includes 15 near-term ecosystem restoration features, a demonstration project program, beneficial use of dredged material program, project modifications program, and a science and technology program. These features and programs were all aimed at addressing the critical restoration needs of coastal Louisiana, with Congress authorizing the features for construction, in WRDA 2007, subject to the conditions recommended in a final report of the Chief of Engineers, if a favorable Chief's Report is completed no later than December 31, 2010. This report addresses six of the 15 near-term ecosystem restoration features described in the restoration plan.

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3. In accordance with Section 7006(e)(3), the reporting officers recommend that the Secretary carry out under the existing authorization the following five projects: Amite River Diversion Canal Modification; Convey Atchafalaya River Water to Northern Terrebonne Marshes; Multipurpose Operation of the Houma Navigation Canal Lock; Small Diversion at Convent / Blind River; and the Whiskey Island component of the Terrebonne Basin Barrier Shoreline Restoration. The recommended plans for each project contain post-construction monitoring and adaptive management for a period of no more than ten years to ensure project performance. Because the recommended plans are ecosystem restoration plans, they do not have any significant adverse effects and no mitigation measures would be required. While the reporting officers recommend that the Secretary carry out the Multipurpose Operation of the Houma Navigation Canal Lock Project, implementation of this project would be contingent on the construction of a lock at Houma under separate authority.

4. The reporting officers also recommend that the Congress raise the total project cost for the Medium Diversion at White Ditch Project and the recommended plan for the Terrebonne Basin Barrier Shoreline Restoration Project. These projects are consistent with the authorization in Section 7006(e)(3) of WRDA 2007, but modification of that authorization is required, because the total costs for these projects exceed the authorized costs as defined in Section 902 of WRDA 1986, as amended.

5. The reporting officers developed the recommended six projects for Louisiana Coastal Area consistent with the direction provided in WRDA 2007. The reporting officers found each of the six projects to be cost effective, technically sound, and environmentally and socially acceptable. Further refinement and additional analysis of these projects will be performed during preconstruction engineering and design and modifications made, as appropriate, prior to project implementation. Such analysis or modifications will continue to be coordinated with Federal, State, and local agencies and other parties. The following paragraphs describe each of the projects in greater detail.

a. Amite River Diversion Canal Modification. The LCA Amite River Diversion Canal Modification (ARDC) study area is located approximately 30 miles southeast of the City of Baton Rouge and west of Lake Maurepas within one of the largest remaining cypress swamps in coastal Louisiana. This ecosystem provides habitat to threatened and endangered species and buffers the highly developed Interstate 10 corridor between New Orleans and Baton Rouge and Lake Maurepas. The 2004 LCA report recommended several projects to address the restoration and stability of the Maurepas Swamp ecosystem including the Small Diversion at Covent / Blind River also included in this report. The ARDC study area includes portions of the Maurepas Swamp adjacent to the Amite River Diversion Canal which connects, and diverts flows from, the Amite River to the lower Blind River near Lake Maurepas. The ARDC recommended plan (Alternative 33) will restore the most degraded portion of the Maurepas Swamp within the study area by restoring the natural hydrology modified by the construction of the Amite River

Diversion Canal and from the resulting impoundment of water, lack of freshwater, sediment and nutrients, and surge-related saltwater intrusion. The recommended plan includes the creation of three gaps and delivery channels through the north bank of the Amite River Diversion Canal. The bank gaps are 70-foot wide cuts with 25-foot benches through the dredged material berm. The channel cross section is 70, 50 and 30 foot wide as it moves into the swamp. Freshwater swamp tree species will be planted on 438 acres in the swamp. One cut will also be created in the railroad grade approximately 0.9 miles north of the ARDC to improve sheetflow. The recommended plan is an implementable increment of the national ecosystem restoration (NER) plan, meets the LCA Program and project objectives, and is within the cost and scope of the authorization contained in Section 7006(e)(3) of WRDA 2007. The NER plan would create gaps on both the north and south bank of the ARDC along with deliery channels, gaps in the railroad grade and vegetative plantings benefiting 3,881 acres of swamp. The NER plan also includes all the areas addressed by the recommended plan and an additional area that is expected to need restoration in the next 20 years. The NER plan would provide 1,602 average annual habitat units (AAHUs) with a total estimated cost for construction of $15,200,000, which exceeds the current authorization. The State of Louisiana, acting as the non-Federal sponsor, supports the recommended plan. The recommended plan will improve habitat function by 679 AAHUs over the 50-year period of analysis and benefit approximately 1,602 acres of existing freshwater swamp. The estimated first cost of the recommended plan is $8,136,000 and in accordance with the cost sharing provisions of WRDA of 1986, as amended by Section 210 of WRDA 1996, the project will be cost shared 65 percent Federal and 35 percent non-Federal. The Federal share of the estimated first cost of this project is estimated at $5,288,000 and the non-Federal share is estimated at $2,848,000. The operation, maintenance, repair, replacement, and rehabilitation costs for the project are estimated at $10,000 per year and are 100-percent non-Federal responsibility. Based on a 4.375-percent discount rate and a 50-year period of analysis, the total equivalent average annual costs of the project are estimated at $489,000, including operation, maintenance, repair, replacement, and rehabilitation. Post-construction monitoring and adaptive management of this ecosystem restoration project is projected to be conducted for no more than 10 years at an estimated cost of $2,971,000.

b. Convey Atchafalaya River Water to Northern Terrebonne Marshes / Multipurpose Operation of the Houma Navigation Canal Lock. The LCA Convey Atchafalaya River Water to Northern Terrebonne Marshes (ARTM) / Multipurpose Operation of the Houma Navigation Lock (MOHNL) study area is located in coastal Louisiana south of Houma, between the Atchafalaya River and Bayou Lafourche. These two projects are hydrologically linked and subsequently have been analyzed and are presented as a combined feature. The ARTM/MOHNL recommended plan (Alternative 2), which is also the national ecosystem restoration plan, will reduce the current trend of marsh degradation in the project area resulting from subsidence, sea level rise, erosion, saltwater intrusion, and lack of sediment and nutrient deposition. The project proposes to accomplish this by utilizing fresh water and nutrients from the Atchafalaya River and the Gulf Intracoastal Waterway (GIWW). The recommended plan features consist of elimination of Gulf Intracoastal Waterway (GIWW) flow constrictions and construction of flow management

features in the interior portions of the Study Area. The recommended plan consists of construction of 56 structures and other water management features. The Carencro Bayou channel would be dredged to restore historic freshwater flow to southeast Penchant basin marshes. A weir would be constructed in Grand Pass to restrict saltwater intrusion into Lake Mechant and surrounding marshes. Several connections would be created between the Houma Navigation Canal and the Lake Boudreaux basin. St. Louis Canal and Grand Bayou would be enlarged to allow for increased fresh water flows into the eastern Terrebonne marshes. These new and enlarged channels would be controlled with water management features such as culverts with stop logs, gates or flap gates. Additionally, marsh berms and terracing would be constructed at strategic locations within the project area to prevent salt water intrusion and slow fresh water outflow. The recommended plan also includes the multipurpose operation of the proposed Houma Navigation Canal (HNC) Lock, if and when constructed. The lock complex would be closed and operated more frequently in order to maximize distribution of freshwater into wetlands downstream of the lock and minimizing saltwater intrusion upstream of the lock. For vessels exceeding the lock size, a traffic management system will be developed to open the sector gates to let these vessels pass. The recommended plan would improve habitat function by approximately 3,220 AAHUs, with the ARTM project providing approximately 2,977 AAHUs and the MOHNL operation providing 243 AAHUs. The project would improve habitat for fish and wildlife species including migratory birds , estuarine fish and shellfish. Benefits include the reduction of projected wetland loss by approximately 9,655 acres of existing wetlands over the 50-year period of analysis. The ARTM/MOHNL recommended plan meets the LCA Program and project objectives, is the NER Plan, and is within the cost and scope of the authorization. The State of Louisiana, acting as the non-Federal sponsor, supports the recommended plan.

The estimated total first cost of the ARTM recommended plan is $283,534,000. In accordance with the cost sharing provisions of WRDA of 1986, as amended by Section 210 of WRDA 1996, the project will be cost shared 65 percent Federal and 35 percent non-Federal. The Federal share of the estimated first cost of the ARTM project is $184,298,000 and the non-Federal share is estimated at $99,236,000. Post-construction monitoring and adaptive management of the ARTM ecosystem restoration project is projected to be conducted for no more than 10 years at an estimated cost of $21,204,000. The operation, maintenance, repair, replacement, and rehabilitation of the ARTM project is estimated at $73,000 per year and is a 100-percent non-Federal responsibility. Based on a 4.375-percent discount rate and a 50-year period of analysis, the total equivalent average annual costs of the ARTM project are estimated at $15,907,000, including operation, maintenance, repair, replacement, and rehabilitation.

The estimated first cost of MOHNL project which is the incremental cost of operations of the proposed constructed lock, for ecosystem restoration is $1,496,000 and in accordance with the cost sharing provisions of WRDA of 1986, as amended by Section 210 of WRDA 1996, the project will be cost shared 65 percent Federal and 35 percent non-Federal. Federal share of the estimated first cost of the MOHNL project is $972,000 and the non-Federal share is estimated at $524,000. Post-construction monitoring and adaptive management of this ecosystem restoration

project is projected to be conducted for no more than ten years at an estimated cost of $98,000. There is no additional operation, maintenance, repair, replacement, and rehabilitation cost forecast for the modification of the lock project. However should any additional OMRR&R cost be identified in subsequent project design and operation investigations they would be a 100-percent non-Federal responsibility. Based on a 4.375-percent discount rate and a 50-year period of analysis, the total equivalent average annual costs of the project are estimated at $83,000, including operation, maintenance, repair, replacement, and rehabilitation. While the reporting officers recommend that the Secretary carry out the Multipurpose Operation of the Houma Navigation Canal Lock Project, this project cannot be implemented until a lock at Houma is constructed under separate authority.

c. Small Diversion at Convent / Blind River. The LCA Small Diversion at Convent/Blind River study area is located approximately equidistant between Baton Rouge and New Orleans, Louisiana within the Maurepas Swamp, one of the largest remaining cypress swamps in coastal Louisiana. The recommended plan (Alternative 2), which is also the national ecosystem restoration plan, will reintroduce the natural periodic, nearly annual flooding by the Mississippi River to the Maurepas Swamp and Blind River, that was cut off by construction of the Mississippi River and Tributaries (MR&T) flood control system. The recommended plan consists of a 3,000 cubic feet per second (cfs) capacity gated box culvert diversion on the Mississippi River with a delivery channel to be constructed in the vicinity of Romeville, Louisiana. The recommended plan has six major components: a diversion structure, a transmission canal, control structures, approximately 30 berm gaps, cross culverts at four locations along U.S. highway 61, and instrumentation to monitor and control the diversion flow rate and the water surface elevations in the diversion, transmission, and distribution system in the swamp. The recommended plan will restore freshwater, nutrients, and sediment input from the Mississippi River. It will promote water distribution in the swamp, facilitate swamp building, and establish hydrologic period fluctuation in the swamp, improving fish and wildlife habitat. The recommended plan will improve habitat function by 6,421 AAHUs over a total of 21,369 acres of bald cypress-tupelo swamp. The recommended plan would improve habitat for many fish and wildlife species including migratory birds, bald eagles, alligators, gulf sturgeon, and the manatee. The recommended plan meets the LCA program and project objectives and is within the scope of the authorization. The State of Louisiana, acting as the non-Federal sponsor, supports the recommended plan. The estimated total first cost of the recommended plan is $116,791,000 and in accordance with the cost sharing provisions of WRDA of 1986, as amended by Section 210 of WRDA 1996, the project will be cost shared 65 percent Federal and 35 percent non-Federal. The Federal share of the estimated first cost of this project is $75,914,000 and the non-Federal share is estimated at $40,877,000. Post-construction monitoring and adaptive management of this project is projected to be conducted for no more than 10 years at a cost of $6,620,000. The operation, maintenance, repair, replacement, and rehabilitation costs of the project are estimated at $2,754,000 per year and are a 100-percent non-Federal responsibility. If further analysis determines that the project increases maintenance dredging requirements for the Mississippi River, Baton Rouge to the Gulf of Mexico project by inducing shoaling, the

incremental costs of any additional maintenance dredging would also be a 100-percent non-Federal responsibility. Based on a 4.375-percent discount rate and a 50-year period of analysis, the total equivalent average annual costs of the project are estimated at $8,859,000, including operation, maintenance, repair, replacement, and rehabilitation.

d. Terrebonne Basin Barrier Shoreline Restoration. The LCA Terrebonne Basin Barrier Shoreline Restoration (TBBSR) study area is located in Terrebonne Parish 30 miles south of the city of Houma, Louisiana and includes the Isles Dernieres and the Timbalier Islands. The Isles Dernieres reach includes Raccoon, Whiskey, Trinity, East, and Wine Islands. The Timbalier Island reach includes Timbalier and East Timbalier Islands. These barrier islands have undergone significant reductions in size due to a number of natural processes and human actions including lack of sediment, storm-induced erosion and breaching, subsidence, sea level rise and hydrologic modifications such as navigation and oil and gas canals. These habitat losses have had a direct adverse impact on wildlife and fisheries resources including threatened and endangered species. Loss of the barrier island habitat also leaves the saline, brackish, and fresh marshes in the upper reaches of the Terrebonne Basin more vulnerable to the high energy marine coastal processes which have exacerbated wetland loss in these areas. The barrier islands also protect oil and gas infrastructure investments including hundreds of wells and pipelines which are of regional and national importance. Furthermore, numerical modeling indicates that the barrier islands reduce storm surges which can mitigate the damage associated with tropical storms on human populations and infrastructure in Terrebonne and Lafourche Parishes. The national ecosystem restoration (NER) plan (Alternative 5), will reintroduce sediment to the coastal sediment transport system. The NER plan includes the restoration of Raccoon Island with 25 years of advanced fill and construction of a terminal groin. The NER plan also includes restoration of Whiskey and Trinity Islands with five years of advanced fill and restoration of Timbalier Island with 25 years of advanced fill. The NER plan includes beach, dune, and marsh restoration and proposes dune heights ranging from +6.4 feet NAVD 88 for Whiskey Island to +7.7 feet NAVD 88 for Raccoon Island with a crest width of 100 feet to marsh heights ranging from +2.4 feet NAVD 88 on Whiskey Island to +3.2 NAVD 88 on Raccoon Island. The NER plan includes renourishment at staggered intervals to maintain the islands. Raccoon Island will be renourished at Target Year (TY) 30. Whiskey Island will require two renourishment intervals. The first will occur at TY20 and the second renourishment interval will occur at TY40 Trinity Island will be renourished at TY25. Timbalier Island will be renourished at TY30. The NER plan will restore geomorphic and hydrologic form provided by barrier island systems and restore and improve essential habitats for fish, migratory birds, and terrestrial and aquatic species. This barrier shoreline system is also a key component in regulating the hydrology, and ultimately the rate of wetland erosion, throughout the estuary. The NER plan consists of restoration of four islands (Whiskey, Raccoon, Trinity, and Timbalier) improving habitat function by 2,833 AAHUs by adding 3,283 acres to the islands for a total size of 5,840 acres. The restored acreage would include 472 acres of dune, 4,320 acres of supratidal habitat, and 1,048 acres of intertidal habitat and ensure the geomorphic and hydrologic form and ecological function of the majority of the estuary over the period of analysis. The recommended plan meets

the LCA program and project objectives and is within the scope of the authorization. However, it exceeds the authorized cost. The State of Louisiana, acting as the non-Federal sponsor, concurs with the reporting officers' recommendation that additional Congressional authorization be requested to allow implementation of the NER plan. The estimated total first cost of the NER plan is $646,931,000 and in accordance with the cost sharing provisions of WRDA of 1986, as amended by Section 210 of WRDA 1996, the project will be cost shared 65 percent Federal and 35 percent non-Federal. The Federal share of the estimated first cost of this project is $420,505,000 and the non-Federal share is estimated at $226,426,000. Post-construction monitoring and adaptive management of this ecosystem restoration project is projected to be conducted for no more than ten years at a cost estimated to be $5,280,000. The operation, maintenance, repair, replacement, and rehabilitation costs of the project, including periodic nourishment, are estimated at $9,960,000 per year and are a 100-percent non-Federal responsibility. Based on a 4.375-percent discount rate and a 50-year period of analysis, the total equivalent average annual costs of the project are estimated at $26,400,000, including operation, maintenance, repair, replacement, and rehabilitation.

While additional authority is needed to raise the total project cost to allow implementation of the entire NER plan, the reporting officers recommend that the Whiskey Island component (Alternative 11) of the NER plan be implemented under the existing authority provided in Section 7006(e)(3) of WRDA 2007. The Whiskey Island component includes renourishment every 20 years to maintain the constructed features. Restoration of the one island will increase habitat function by 678 AAHUs by restoring a total of 1,272 acres on the island, including 65 acres of dune, 830 acres of supratidal habitat, and 377 acres of intertidal habitat. The Whiskey Island component is an implementable increment of the NER plan, meets the LCA Program objectives, and is within the cost and scope of the current WRDA authorization. The State of Louisiana, acting as the non-Federal sponsor, supports immediate implementation of the Whiskey Island component. The estimated total first cost of the Whiskey Island component is $113,434,000 and in accordance with the cost sharing provisions of WRDA of 1986, as amended by Section 210 of WRDA 1996, the project will be cost shared 65 percent Federal and 35 percent non-Federal. The Federal share of the estimated first cost of this project is $73,732,000 and the non-Federal share is $39,702,000. Post-construction monitoring and adaptive management of this ecosystem restoration project is projected to be conducted for no more than ten years at an estimated cost of $5,820,000. The operation, maintenance, repair, replacement, and rehabilitation cost of the project, including periodic nourishment, are estimated at $6,900,000 per year and is a 100-percent non-Federal responsibility. Based on a 4.375-percent discount rate and a 50-year period of analysis, the total equivalent average annual costs of the project are estimated at $9,508,000, including operation, maintenance, repair, replacement, and rehabilitation.

e. Medium Diversion at White Ditch. The LCA Medium Diversion at White Ditch (MDWD) project area is located on the east bank of the Mississippi River south of New Orleans in Plaquemines Parish near the town of Phoenix, Louisiana. The area includes a portion of the Breton Sound basin framed by the Mississippi River and the River aux Chenes ridge as well as

the gulfward extent of the Breton Sound. The recommended plan, (Alternative 4), which is also the national ecosystem restoration plan, will restore the supply and distribution of freshwater and sediment disrupted by the construction of the Mississippi River and Tributaries flood control. The recommended plan includes a 35,000 cubic feet per second (cfs) capacity gated box culvert diversion on the Mississippi River with a delivery channel to be constructed in the vicinity of Phoenix, Louisiana. The structure will consist of ten 15-foot by 15-foot box culverts and an approximately 9,500 foot conveyance channel to move the diverted water into surrounding marshes. Additionally, notched weirs will be constructed at existing channel intersections to help control and direct the flow of water into the study area. Dredged material from the conveyance channel will be used beneficially to create approximately 416 acres of marsh and ridge habitat. The recommended operational plan consists of pulsing diversion flows up to 35,000 cfs through the structure during March and April and maintaining maintenance flows up to 1,000 cfs the rest of the year. The recommended plan will improve habitat function by 13,353 AAHUs by creating and nourishing approximately 20,315 acres of fresh, intermediate, brackish, and saline wetlands. This project is one of the key components to demonstrating both the ability to stem or reverse the coastal land loss trend and provide a mechanism to combat relative sea level rise in coastal Louisiana. The recommended plan meets the LCA Program objectives and is within the scope of the WRDA authorization, however, it exceeds the authorized project cost. The State of Louisiana, acting as the non-Federal sponsor, supports the reporting officers' recommendation that Congress increase the total project cost to allow implementation of the recommended plan to fully address the restoration needs of the study area identified in this report. Supplemental environmental analysis will be performed prior to construction of the recommended plan to address potential impacts on water quality and fisheries, including coordination with Federal, State, and local agencies and other interested parties as appropriate. The estimated total first cost of the recommended plan is $365,201,000 and in accordance with the cost sharing provisions of WRDA of 1986, as amended by Section 210 of WRDA 1996, the project will be cost shared 65 percent Federal and 35 percent non-Federal. The Federal share of the estimated first cost of this project is $237,381,000 and the non-Federal share is estimated at $127,820,000. Post-construction monitoring and adaptive management of this ecosystem restoration project is projected to be conducted for no more than ten years at an estimated cost of $11,143,000. The operation, maintenance, repair, replacement, and rehabilitation costs of the project are estimated at $1,468,000 per year and are a 100-percent non-Federal responsibility. If further analysis determines that the project increases maintenance dredging requirements for the Mississippi River, Baton Rouge to the Gulf of Mexico project by inducing river shoaling, the incremental costs of any additional channel maintenance dredging would also be a 100-percent non-Federal responsibility. Based on a 4.375-percent discount rate and a 50-year period of analysis, the total equivalent average annual costs of the project are estimated at $21,237,000, including operation, maintenance, repair, replacement, and rehabilitation.

6. The State of Louisiana supports the recommended plans for the six projects described herein. At October 2010 price levels, the estimated total first cost for the recommended plans for the six

projects is $1,422,089,000. The estimated total first costs for each of the six projects are summarized below in Table 1.

Table 1
LCA Section 7006(e)(3) Projects
Recommended Plan Cost and Benefit Summary
(October 2010 Price Level)

Project	Alternative	Total First Cost	Impacted Acres	Average Annual Habitat Units
Amite River Diversion Canal Modification	Alt. 33	$8,136,000	1,602	679
Convey Atchafalaya River Water to Northern Terrebonne Marshes	Alt. 2	$283,534,000	9,655	3,220
Houma Navigation Control Lock	Alt. 2	$1,496,000	0***	243
Small Diversion at Convent/Blind River	Alt. 2	$116,791,000	21,369	6,421
Terrebonne Basin Barrier Shoreline Restoration	Alt. 11*	$646,931,000	5,840	2,063
	(Alt. 5)**	($113,434,000)	(1,272)	(379)
Medium Diversion at White Ditch	Alt. 4*	$365,201,000	35,146	13,353
Total		**$1,422,089,000**	**73,612**	**25,979**

* Implementation of the recommended plan to fully address the restoration needs of the study area identified in this report requires additional authorization by Congress by raising the total project cost.
** Alternative 5 (Whiskey Island) is an increment of Alternative 11 (the recommended plan).
*** Impacted acres overlap with Convey Atchafalaya River Water to Northern Terrebonne Marshes

7. In accordance with the cost sharing provisions of WRDA of 1986, as amended by Section 210 of WRDA 1996, the Federal share of the first cost of the six projects is estimated at $924,358,000 (65 percent) and the non-Federal share is estimated at $497,731,000 (35 percent). The cost of lands, easements, rights-of-way, relocations, and dredged or excavated material disposal areas is estimated at $13,454,000. The total cost includes an estimated $47,856,000 for environmental monitoring, and adaptive management. The State of Louisiana, the non-Federal sponsor, would be responsible for the OMRR&R of the projects after construction, a cost currently estimated at about $15,605,000 per year.

Table 2 shows the Federal and non Federal cost of the projects.

Table 2
LCA Section 7006(e)(3) Projects
Cost Apportionment (October 2010 Price Level)

Project	Total First Cost	Federal Cost (65%)	Non-Federal Cost (35%)	Total Monitoring	Total Adaptive Management	Annual OMRR&R
Amite River Diversion Canal Modification	$8,136,000	$5,288,000	$2,848,000	$2,113,000	$858,000	$10,000
Convey Atchafalaya River Water to Northern Terrebonne Marshes	$283,534,000	$184,298,000	$99,236,000	$18,874,000	$2,428,000	$73,000
Houma Navigation Control Lock*	$1,496,000	$972,000	$524,000	$98,000	$0	$0
Small Diversion at Convent/Blind River	$116,791,000	$75,914,000	$40,877,000	$4,284,000	$2,336,000	$2,754,000
Terrebonne Basin Barrier Shoreline Restoration	$646,931,000	$420,505,000	$226,426,000	$8,280,000	$1,680,000	$11,300,000
	($113,434,000)	($73,732,000)	($39,702,000)	($4,140,000)	($1,680,000)	($6,900,000)
Medium Diversion at White Ditch	$365,201,000	$237,381,000	$127,820,000	$8,807,000	$2,336,000	$1,468,000
Total LCA	**$1,422,089,000**	**$924,358,000**	**$497,731,000**	**$38,218,000**	**$9,638,000**	**$15,605,000**

8. In concert with the Corps Campaign Plan, the plans recommended in this report were developed utilizing a systematic and regional approach in formulating solutions and in evaluating the impacts and benefits of those solutions. Specifically the projects individually and collectively provide enduring and essential water resources management solutions. The plans were developed through a broad based collaborative process that resulted in wetland restoration that enhances the sustainability of, and is integrated with, the multiple socio-economic purposes supported by the coastal ecosystem. The development of these projects also demonstrates the Corps goal to cultivate competent, disciplined teams to deliver quality plans.

9. Independent External Peer Review (IEPR) of the six conditionally authorized LCA projects was coordinated through the Planning Center of Expertise for Ecosystem Restoration and performed by Battelle Corporation. Independent technical review teams were assembled for each project. The technical review considered all aspects of the project evaluations and the resulting output. The IEPR comments identified concerns in areas of the evaluations that would benefit from additional refinement. The IEPR reviews concurred with the project recommendations and all comments were satisfactorily resolved. Several significant recommendations will be further evaluated during project implementation. In concurrence with

IEPR comments, additional documentation of hydrodynamic model and land change evaluations were provided for the Amite River Diversion Canal Modification, Convey Atchafalaya River Water to Northern Terrebonne Marshes, Multipurpose Operation of the Houma Navigation Canal Lock, and Small Diversion at Convent / Blind River projects. Additional documentation to support the alternative comparison and plan selection process was provided for all the presented projects to address the comments. Other actions will be taken in response to IEPR comments during project preconstruction engineering and design (PED). For the Amite River Diversion Canal Modification project, additional model refinements will be used to improve the forecast of relative sea level rise (RSLR) effects and revise the adaptive management (AM) plan. For the Convey Atchafalaya River Water to Northern Terrebonne Marshes / Multipurpose Operation of the Houma Navigation Canal Lock Canal Lock project, additional refinements of land change, RSLR, and wetland benefit forecast tools to better correlate them to the high complexity of the project area will be undertaken. For the Convent / Blind river project, additional data collection and refinement of the hydrodynamic model will be undertaken to minimize potential local drainage effects and identify specific management actions for swamp enhancement, as well as refine the AM plan. For the Terrebonne Barrier Shoreline project, refined assessment of estuary-wide current and wave conditions and physical process modeling will be undertaken to better capture the systemic benefits and allow better coordination of project implementation and O&M. Specific construction effects will also be assessed and construction modifications applied to minimize critical habitat disruption. For the White Ditch project, a refinement of the land change evaluation, and an assessment of the effect of RSLR will be undertaken to allow a clearer understanding of potential adaptive management needs and revision of the AM plan. Finally, for the Small Diversion at Convent / Blind River and the Medium Diversion at White's Ditch projects a comprehensive assessment of cumulative diversion impacts on the Mississippi River will be undertaken prior to the initiation of construction to improve the assessments of cumulative project effects and help set operational criteria.

10. The LCA plans recommended by the reporting officers are environmentally justified, technically sound, cost-effective, and socially acceptable. The recommended plans conform to essential elements of the U.S. Water Resources Council's Economic and Environmental Studies and comply with other administration and legislative policies and guidelines. Also, the views of interested parties, including Federal, State, and local agencies have been considered.

11. I concur in the findings, conclusions, and recommendation of the reporting officers. Accordingly, I recommend implementation of these projects, in accordance with the reporting officers' recommendations with such modifications as in the discretion of the Chief of Engineers may be advisable. I further recommend, in accordance with the reporting officers recommendations, that the authorizations for Terrebonne Basin Barrier Shoreline Restoration and Medium Diversion at White Ditch be modified to raise the total project cost to allow for construction of the national ecosystem restoration plans for those projects. My recommendations are subject to cost sharing, financing, and other applicable requirements of Federal and State laws and policies, including WRDA 1986, as amended by Section 210 of

WRDA 1996. The State of Louisiana, acting as the non-Federal sponsor, would provide the non-Federal cost share and all lands, easements, relocations, right-of-ways and disposals. Further, the non-Federal sponsor would be responsible for all OMRR&R. This recommendation is subject to the non-Federal sponsor agreeing to comply with all applicable Federal laws and policies, including but not limited to its agreeing to:

a. Provide a minimum of 35 percent of total project costs as further specified below:

(1) Enter into an agreement which provides, prior to execution of the project partnership agreement, 25 percent of design costs;

(2) Provide, during the first year of construction, any additional funds needed to cover the non-Federal share of design costs;

(3) Provide all lands, easements, and rights-of-way, including those required for relocations, the borrowing of material, and the disposal of dredged or excavated material; perform or ensure the performance of all relocations; and construct improvements required on lands, easements, and rights-of-way to enable the disposal of dredged or excavated material that the Government determines to be necessary for the construction, operation, maintenance, repair, replacement, and rehabilitation of the project;

(4) Provide, during construction, any additional funds necessary to make its total contribution equal to 35 percent of the total project costs allocated to the project;

b. Provide the non-Federal share of that portion of the costs of mitigation and data recovery activities associated with historic preservation, that are in excess of 1 percent of the total amount authorized to be appropriated for the project;

c. Not use funds provided by a Federal agency under any other Federal program, to satisfy, in whole or in part, the non-Federal share of the cost of the project unless the Federal agency that provides the funds determines that the funds are authorized to be used to carry out the study or project;

d. Not use project or lands, easements, and rights-of-way required for the project as a wetlands bank or mitigation credit for any other project;

e. For as long as the project remains authorized, operate, maintain, repair, replace, and rehabilitate the project, or functional portion of the project, including mitigation, at no cost to the Federal Government, in a manner compatible with the project's authorized purposes and in accordance with applicable Federal and state laws and regulations and any specific directions prescribed by the Federal Government;

f. Give the Federal Government a right to enter, at reasonable times and in a reasonable manner, upon property that the non-Federal sponsor, now or hereafter, owns or controls for access to the project for the purpose of inspecting, operating, maintaining, repairing, replacing, rehabilitating, or completing the project. No completion, operation, maintenance, repair, replacement, or rehabilitation by the Federal Government shall relieve the non-Federal sponsor of responsibility to meet the non-Federal sponsor's obligations, or to preclude the Federal Government from pursuing any other remedy at law or equity to ensure faithful performance;

g. Hold and save the United States free from all damages arising from the construction, operation, maintenance, repair, replacement, and rehabilitation of the project and any project-related betterments, except for damages due to the fault or negligence of the United States or its contractors;

h. Perform, or cause to be performed, any investigations for hazardous substances that are determined necessary to identify the existence and extent of any hazardous substances regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Public Law 96-510, as amended (42 U.S.C. 9601-9675), that may exist in, on, or under lands, easements, or rights-of-way that the Federal Government determines to be required for the initial construction, periodic nourishment, operation, and maintenance of the project. However, for lands that the Federal Government determines to be subject to the navigation servitude, only the Federal Government shall perform such investigations unless the Federal Government provides the non-Federal sponsor with prior specific written direction, in which case the non-Federal sponsor shall perform such investigations in accordance with such written direction;

i. Assume, as between the Federal Government and the non-Federal sponsor, complete financial responsibility for all necessary cleanup and response costs of any CERCLA regulated materials located in, on, or under lands, easements, or rights-of-way that the Federal Government determines to be necessary for the initial construction, periodic nourishment, operation, or maintenance of the project;

j. Agree that, as between the Federal Government and the non-Federal sponsor, the non-Federal sponsor shall be considered the operator of the project for the purpose of CERCLA liability, and to the maximum extent practicable, operate, maintain, and repair the project in a manner that would not cause liability to arise under CERCLA;

k. Prevent obstructions of or encroachments on the project (including prescribing and enforcing regulations to prevent such obstruction or encroachments) which might reduce ecosystem restoration benefits, hinder operation and maintenance, or interfere with the project's proper function, such as any new developments on project lands or the addition of facilities which would degrade the benefits of the project;

l. Keep and maintain books, records, documents, and other evidence pertaining to costs and expenses incurred pursuant to the project, for a minimum of three years after completion of the accounting for which such books, records, documents, and other evidence is required, to the extent and in such detail as would properly reflect total costs of construction of the project, and in accordance with the standards for financial management systems set forth in the Uniform Administrative Requirements for Grants and Cooperative Agreements to State and Local Governments at 32 Code of Federal Regulations (CFR) Section 33.20;

m. Comply with Section 221 of Public Law 91-611, Flood Control Act of 1970, as amended (42 U.S.C. 1962d-5), and Section 103 of the Water Resources Development Act of 1986, Public Law 99-662, as amended (33 U.S.C. 2213), which provides that the Secretary of the Army shall not commence the construction of any water resources project or separable element thereof, until the non-Federal sponsor has entered into a written agreement to furnish its required cooperation for the project or separable element;

n. Comply with all applicable Federal and state laws and regulations, including, but not limited to, Section 601 of the Civil Rights Act of 1964, Public Law 88-352 (42 U.S.C. 2000d), and Department of Defense Directive 5500.11 issued pursuant thereto, as well as Army Regulation 600-7, entitled "Nondiscrimination on the Basis of Handicap in Programs and Activities Assisted or Conducted by the Department of the Army," and all applicable Federal labor standards and requirements, including but not limited to 40 U.S.C. 3141- 3148 and 40 U.S.C. 3701 – 3708 (revising, codifying, and enacting without substantial change the provisions of the Davis-Bacon Act (formerly 40 U.S.C. 276a et seq.), the Contract Work Hours and Safety Standards Act (formerly 40 U.S.C. 327 et seq.) and the Copeland Anti-Kickback Act (formerly 40 U.S.C. 276c et seq.); and

o. Comply with all applicable provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, Public Law 91-646, as amended (42 U.S.C. 4601-4655), and the Uniform Regulations contained in 49 CFR Part 24, in acquiring lands, easements, and rights-of-way necessary for the initial construction, periodic nourishment, operation, and maintenance of the project, including those necessary for relocations, borrow materials, and dredged or excavated material disposal, and inform all affected persons of applicable benefits, policies, and procedures in connection with said Act.

12. The recommendations contained herein reflect the information available at this time and current departmental policies governing the formulation of individual projects. They do not reflect program and budgeting priorities inherent in the formulation of the national civil works construction program or the perspective of higher levels within the executive branch. Consequently, the recommendations may be modified before they are transmitted to Congress for authorization and/or implementation funding. However, prior to transmittal to Congress, the State of Louisiana, interested Federal agencies, and other parties will be advised of any significant modifications in the recommendations and will be afforded an opportunity to comment further.

R. L. VAN ANTWERP
Lieutenant General, US Army
Chief of Engineers